Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers [~~and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature~~], said method comprising the steps of:

forming two air-filled channels <u>in said layers of ceramic</u> extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels; [~~and~~]

forming <u>by silk screen printing</u> essentially parallel first and second planes of conductive material above and below the core [~~part~~] of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes [~~are defined between~~] <u>do not extend past</u> said two air-filled channels; <u>and</u>

<u>completing the circuit structure including the waveguide by exposing the circuit structure to a heat treatment;</u>

wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

2. (Currently Amended) The waveguide manufacturing method according to claim 18, further comprising the step of:

forming at least one row of vias in the core [~~part~~] of the waveguide, wherein said at least one row of vias is positioned close to <u>at least</u> one of the air-filled channels and each

via in the at least one row of vias is filled with conductive material whereby said first and second planes of conductive material are galvanically connected.

3. (Currently Amended) A waveguide manufactured using a multilayer ceramic technique comprising:

a waveguide core defined by:

two air-filled channels extending the length of the waveguide;

a bottom surface of conductive material under the waveguide core; and

a top surface of conductive material on the waveguide core;

wherein said top and bottom [~~layers~~] surfaces are substantially parallel planes;

wherein said top and bottom [~~layers~~] surfaces do not extend past said two air-filled channels; and

two remaining waveguide portions defined outside said two air-filled channels;

wherein the waveguide core and the two remaining portions comprise ceramic material having the same permittivity, and wherein said permittivity is greater than the permittivity of air.

4. (Currently Amended) The waveguide according to claim 3, wherein said waveguide core further comprises:

at least one row of vias filled with conductive material and positioned close to at least one of the air-filled channels, whereby said vias galvanically connect said top and bottom surfaces.

5. (Previously Presented) The waveguide according to claim 3, wherein a hole is disposed in the top surface of conductive material to thereby excite an electromagnetic field intended to propagate in the waveguide core.

6. (Previously Presented) The waveguide according to claim 3, wherein a hole is disposed in the top surface of conductive material, and wherein said hole is fitted with a probe leading to the

waveguide core to thereby excite an electromagnetic field intended to propagate in the waveguide.

7. (Currently Amended) The waveguide according to claim 3, wherein a hole is [~~made~~] disposed in the top surface of conductive material, and wherein said hole is fitted with a coupling loop leading to the waveguide core to thereby excite an electromagnetic field intended to propagate in the waveguide.

8. (Previously Presented) The waveguide manufacturing method according to claim 18, wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

9. (Previously Presented) The waveguide manufacturing method according to claim 18, wherein a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide.

10. (Currently Amended) The waveguide manufacturing method according to claim 18, wherein a waveform that can propagate in the direction of the length of the waveguide is one of a transverse-electric [~~or~~] and transverse-magnetic waveform.

11. (Currently Amended) The waveguide manufacturing method according to claim 18, wherein an interface between the waveguide core and air in the two air-filled channels [~~form~~] defines a discontinuity of the characteristic impedance of the waveguide core.

12. (Currently Amended) The waveguide manufacturing method according to claim 18, wherein a ceramic structure [~~comprising~~] including the waveguide is comprised substantially of the same ceramic material.

13. (Currently Amended) The waveguide manufacturing method according to claim 18, wherein the substantially parallel [~~layers~~] planes of conductive material [~~forming~~] comprising the

top and bottom surfaces [~~of~~] on the waveguide core either (i) substantially cover the waveguide core or (ii) are partly gridded.

14. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers [~~and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature~~], said method comprising the steps of:

forming two air-filled channels in said layers of ceramic extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels;

forming by silk screen printing essentially parallel first and second planes of conductive material above and below the core [~~part~~] of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels;

forming a first row of vias in the core [~~part~~] of the waveguide, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels;

forming a second row of vias in the core [~~part~~] of the waveguide, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels; [~~and~~]

forming a third row of vias in the core [~~part~~] of the waveguide; and

completing the circuit structure including the waveguide by exposing the circuit structure to a heat treatment;

wherein each via is filled with conductive material whereby first and second planes of conductive material are galvanically connected.

15. (Currently Amended) The waveguide manufacturing method according to claim 19, further comprising the step of:

forming a third row of vias in the core [~~part~~] of the waveguide.

16. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers [~~and a conductive layer of material is silk screen printed on a ceramic layer, and the circuit structure is completed by exposing the circuit structure to a high temperature~~], said method comprising the steps of:

forming two air-filled channels in said layers of ceramic extending the length of the waveguide, wherein a core of the waveguide is defined between the two air-filled channels and two remaining portions of ceramic material are defined outside the two air-filled channels;

forming by silk screen printing essentially parallel first and second planes of conductive material above and below the core [~~part~~] of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels; [~~and~~]

forming at least one row of vias in one of the two remaining portions of ceramic material; and

completing the circuit structure including the waveguide by exposing the circuit structure to a heat treatment.

17. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers [~~and a conductive layer of material is silk screen printed on a ceramic~~

~~layer, and the circuit structure is completed by exposing the circuit structure to a high temperature~~], said method comprising the steps of:

forming two air-filled channels in said layers of ceramic extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels;

forming by silk screen printing essentially parallel first and second planes of conductive material above and below the core [~~part~~] of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes are defined between said two air-filled channels; and

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core; and

completing the circuit structure including the waveguide by exposing the circuit structure to a heat treatment.

18. (Previously Presented) A method for manufacturing a waveguide using a multilayer ceramic manufacturing technique, comprising the steps of:

forming two air-filled channels extending the length of the waveguide, whereby a waveguide core is defined between said two air-filled channels and two remaining waveguide portions are defined outside said two air-filled channels, wherein the waveguide core and the two remaining waveguide portions comprise ceramic material having the same permittivity, and wherein said same permittivity is greater than the permittivity of air;

forming a bottom surface of conductive material under the waveguide core, wherein said bottom surface does not extend over the remaining waveguide portions; and

forming a top surface of conductive material on the waveguide core, wherein said top surface does not extend over the remaining waveguide portions, wherein said top and bottom surfaces are substantially parallel planes.

19. (Previously Presented) The waveguide manufacturing method according to claim 18, further comprising the steps of:

forming a first row of vias in the waveguide core, wherein said first row of vias is positioned close to a first air-filled channel of the two air-filled channels; and

forming a second row of vias in the waveguide core, wherein said second row of vias is positioned close to a second air-filled channel of the two air-filled channels.

20. (Previously Presented) The waveguide manufacturing method according to claim 18, further comprising the step of:

forming a quarter-wave transformer at an end of the waveguide core where a signal is fed into the waveguide core.

21. (Currently Amended) The waveguide manufacturing method according to claim 18, further comprising the step of:

forming at least one row of vias filled with conductive material and positioned close to <u>at least</u> one of the air-filled channels, whereby said vias galvanically connect said top and bottom surfaces.

22. (Previously Presented) The waveguide manufacturing method according to claim 18, further comprising the step of:

disposing a hole in the top surface of conductive material by means of which an electromagnetic field can be excited to thereby propagate in the waveguide core.

23. (Previously Presented) The waveguide manufacturing method according to claim 22, further comprising the step of:

fitting a probe in said hole, wherein said probe excites the electromagnetic field.

24. (Previously Presented) The waveguide manufacturing method according to claim 22, further comprising the step of:

fitting a coupling loop in said hole leading to the waveguide core, wherein said coupling loop excites the electromagnetic field.

25. (Previously Presented) The waveguide according to claim 3, wherein the multilayer ceramic technique is one of High Temperature Cofired Ceramics (HTCC) and Low Temperature Cofired Ceramics (LTCC).

26. (Previously Presented) The waveguide according to claim 3, wherein a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide.

27. (Currently Amended) The waveguide according to claim 3, wherein a waveform that can propagate in the direction of the length of the waveguide is one of a transverse-electric [~~or~~] and transverse-magnetic waveform.

28. (Currently Amended) The waveguide according to claim 3, wherein an interface between the waveguide core and air in the two air-filled channels [~~form~~] defines a discontinuity of the characteristic impedance of the waveguide core.

29. (Currently Amended) The waveguide according to claim 3, wherein a ceramic structure [~~comprising~~] including the waveguide is comprised substantially of the same ceramic material.

30. (Currently Amended) The waveguide according to claim 3, wherein the substantially parallel [~~layers of conductive material forming the~~] top and bottom surfaces [~~of~~] on the waveguide core either (i) substantially cover the waveguide core or (ii) are partly gridded.

31. (Currently Amended) A method for manufacturing a waveguide in a circuit structure using a multilayer ceramic technique, wherein said circuit structure is assembled of separate layers of ceramic, said ceramic having a permittivity ε_r which is higher than the corresponding value of air, and wherein, in said multilayer ceramic technique, layers, cavities, and holes are made in the ceramic layers [~~and a conductive layer of material is silk-screen printed on a ceramic~~

~~layer, and the circuit structure is completed by exposing the circuit structure to a high temperature~~], said method comprising the steps of:

forming two air-filled channels in said layers of ceramic extending the length of the waveguide, wherein a core of the waveguide is defined between said two air-filled channels and a width of each of the two air-filled channels is substantially one-fourth of a wavelength of a cutoff frequency of the waveguide; and

forming by silk screen printing essentially parallel first and second planes of conductive material above and below the core [~~part~~] of the waveguide, wherein said first and second conductive planes define a top and a bottom of the core of the waveguide, and wherein said first and second conductive planes [~~are defined between~~] do not extend past said two air-filled channels; and

completing the circuit structure including the waveguide by exposing the circuit structure to a heat treatment.